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specimens judiciously selected. The treatment of the spermatophytes is the most comprehensive in the selection of material and in its preparation. The author, by his careful discussion of the various methods in the preparation of material emphasizes what is too often neglected in general histological studies, particularly of the lower forms, the careful preparation of material for examination. Much of the histological work with classes is misleading and useless because the teacher fails to appreciate this point. The student who learns to make a proper use of the best methods early in his course will be well repaid when at a later period he begins more critical studies. A convenient list of formulae for reagents is placed at the end of the volume.

The technique of the book is good, and the illustrations well selected, a few of them being photomicrographs of excellent preparations. The work is a most acceptable contribution to the growing list of laboratory manuals.—M. B. THOMAS.

MINOR NOTICES.

JAMES R. GOW⁶ has published a preliminary list of the flowering plants of Adair county, Iowa.

WILDEMAN and DURAND⁷ have issued a further publication on the Congo flora. It consists of the first fascicle of an enumeration of plants collected by Alfred Dewèvre in 1895-6 in the state of Congo, and contains from Ranunculaceae through Leguminosae, with descriptions of new species. A notice of the previous series may be found in BOT. GAZ. 31:70. 1901.—J. M. C.

T. HEDLUND⁸ has published a monograph of the genus *Sorbus*, which further rehabilitates a Linnean genus long included in *Pirus*. The author recognizes 58 species, and discusses them in great detail, with the help of text illustrations of venation, pollen grains, etc. He also includes subspecies and hybrids. Some ten or twelve North American species are involved.—J. M. C.

THE FIRST part of the second volume of Wiesner's *Rohstoffe des Pflanzenreiches* has just been issued.⁹ It contains part of the seventeenth section on *woods*, newly elaborated by Dr. Karl Wilhelm with the assistance of Dr. S. Zeisel, who contributes the chapter on the chemistry of wood. The structure of woods and their physical and chemical qualities are described in 51 pp., followed by a synopsis (90 pp.) of the more important plants whose wood

⁶ Proc. Iowa Acad. Sci. 8:1-8. 1901.

⁷ Annales du Musée du Congo. Botanique. III. Reliquiae Dewevreanae. Fasc. I. Bruxelles, May, 1901.

⁸ Monographie der Gattung *Sorbus*. Kongl. Svenska Vetensk.-Acad. Handl. 35:1-147. 1901.

⁹ WEISNER, JULIUS: Die Rohstoffe des Pflanzenreiches. Versuch einer technischen Rohstofflehre des Pflanzenreiches. Second ed. Lieferung 6. 8vo. pp. 1-160. Leipzig: Wilhelm Engelmann, 1901. M5.

is used in the arts. A seventh chapter (incomplete) is to describe the microscopic characters of the most widely used woods.—C. R. B.

THE LAST ISSUE of the *Minnesota Botanical Studies* (2:537-655. 1901) contains the following papers: E. M. FREEMAN, "A preliminary list of Minnesota Uredineae," a little over 100 species being included; DEALTON SAUNDERS, "A new species of *Alaria*," from the Californian coast; F. K. BUTTEN, "A preliminary list of Minnesota Xylariaceae," including 19 species; W. A. WHEELER, "A contribution to the knowledge of the flora of the Red river valley in Minnesota," 325 species being listed, with eight excellent heliotype plates of plant formations; H. B. HUMPHREY, "Observations on *Gigartina exasperata* Harv.," a histological study, with one heliotype plate; W. G. FANNING, "Observations on the algae of the St. Paul city water;" W. A. WHEELER, "Notes on some plants of Isle Royale;" D. LANGE, "Revegetation of Trestle island;" J. C. ARTHUR and E. W. D. HOLWAY, "Violet rusts of North America," with one plate; H. L. LYON, "Observations on the embryogeny of *Nelumbo*" with three plates, reviewed in the BOTANICAL GAZETTE for October.—J. M. C.

THAT FIRES are not always so detrimental as they seem is disclosed by a reading of the second edition of the phytogeography of Nebraska.¹⁰ The first edition has been reviewed in this journal,¹¹ and a statement as to the new material is all that is needed here. A comparison of the two editions shows that the entire book has been essentially revised and brought up to date, although the table of contents reads much the same in the two editions. Among the more important additions are a full discussion of methods for the determination of the frequency and abundance of species, a brief treatment of the primitive flora of the great plains, and the treatment of floral and vegetation elements and of accessory biological characters. Throughout the detailed chapters on the formations, much new material, the result of three years' further labor, is added. In the review of the first edition, the importance of this contribution to ecological workers was stated. Now that the book has been in actual use for four years, it is possible to speak yet more highly of its value. It is not too much to say that it is the most important and valuable work that has yet appeared in the field of American phytogeography.—H. C. COWLES.

NOTES FOR STUDENTS

S. YAMANOUCHI¹² has described and figured bodies in the dividing pollen mother cell of *Lilium longiflorum*, which stain deeply, are centers of radia-

¹⁰ POUND, ROSCOE, and CLEMENTS, FREDERIC E.—The phytogeography of Nebraska. I. General Survey. 8vo. pp. 442, with four maps. Lincoln, Nebraska: The University Publishing Co. 1900. Second edition.

¹¹ BOT. GAZ. 25:370. 1898.

¹² Einige Beobachtungen über die Centrosomen in den Pollenmutterzellen von *Lilium longifolium*. Beihefte Bot. Centralbl. 10:310-303. pl. 1. 1901.